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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/765,154	TWU ET AL.
	Examiner	Art Unit
	Rahel Guarino	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 01/28/2004.
- 2a) This action is FINAL.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-4,6-9,11-14,17-21,24-28,30-33,37 and 38 is/are rejected.
- 7) Claim(s) 5,10,15,16,22,23,29 and 34-36 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 28 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claim 1,2,11,12,17-19,30, 31 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura US, 5,216,693 and further in view Hirzel et al. US, 4,606,052.**

Re claim 1, Nakamura discloses a method for encoding a data signal (Manchester coding) comprising:

encoding the data signal into an encoded data signal, wherein the encoded data signal is a first DC-balanced signal (col. 3 line 13-19, (RZ or return to zero, thus the encoded data is the first DC-balanced signal); and

spreading the encoded data signal (correlating with PN code) with a spreading code to generate an output transmission signal (col. 6 line 12-16), does not provide second DC-balanced signal.

However, Hirzel teaches wherein the output transmission signal is a DC-balanced signal (col. 1 line 60 to col. 2 line 2).

Therefore, taking the combined teaching of Nakamura and Hirzel as a whole

would have been rendered obvious to one skilled in the art to modify Nakamura to utilize DC-balancing signal for the benefit of monitoring signal level (col. 3 line 11-22).

Re claim 2, the modified invention as claimed in claim 1, wherein the Manchester Code is used to encode the data signal (col. 4 line 38-46, "Nakamura").

Re claim 11, Nakamura discloses a method for encoding a data signal, comprising:

generating a spreading code, wherein the spreading code contains a direct current (DC) component (col. 6 line 12-16);

encoding the spreading code into an encoded spreading code, wherein the encoded spreading code is a first DC-balanced signal (col. 3 line 13-19); and

spreading the data signal with the encoded spreading code to generate an output transmission signal (col. 6 line 12-16), does not provide second DC-balanced signal.

However, Hirzel teaches wherein the output transmission signal is a DC-balanced signal (col. 1 line 60 to col. 2 line 2).

Therefore, taking the combined teaching of Nakamura and Hirzel as a whole would have been rendered obvious to one skilled in the art to modify Nakamura to utilize DC-balancing signal for the benefit of monitoring signal level (col. 3 line 11-22).

Re claim 12, the modified invention as claimed in claim 11, wherein the Manchester Code is used to encode the data signal (col. 4 line 38-46, "Nakamura").

Re claim 17, the modified invention as claimed in claim 11, wherein the spreading code is a Pseudo random Noise (PN) sequence (col. 1

line 48-50, "Nakamura").

Re Claim 18, Nakamura discloses an apparatus for encoding a data signal, comprising:

an encoder for encoding the data signal into an encoded data signal and outputting the encoded data signal, wherein the encoded data signal is a first DC-balanced signal (col. 3 line 13-19);

a spreading code generator for outputting a spreading code; and a spreader coupling to the spreading code generator and the encoder, for spreading the encoded data signal according to the spreading code and outputting an output transmission signal (col. 6 line 12-16); does not provide a second DC-balanced signal.

However, Hirzel teaches wherein the output transmission signal is a DC-balanced signal (col. 1 line 60 to col. 2 line 2).

Therefore, taking the combined teaching of Nakamura and Hirzel as a whole would have been rendered obvious to one skilled in the art to modify Nakamura to utilize DC-balancing signal for the benefit of monitoring signal level (col. 3 line 11-22).

Re claim 19, the modified invention as claimed in claim 18, wherein the Manchester Code is used to encode the data signal (col. 4 line 38-46, "Nakamura").

Re claim 30, Nakamura discloses an apparatus for encoding a data signal, comprising:

a spreading code generator for outputting a spreading code, wherein the spreading code contains a direct current (DC) component (col. 6 line 12-16);

an encoder coupling to the spreading code generator, for encoding the

spreading code and outputting an encoded spreading code, wherein the encoded spreading code is a first DC-balanced signal (col. 3 line 13-19); a spreader coupled to the encoder, for spreading the data signal according to the encoded spreading code), and outputting an output transmission signal (col. 6 line 12-16); does not provide second DC-balanced signal.

However, Hirzel teaches wherein the output transmission signal is a DC-balanced signal (col. 1 line 60 to col. 2 line 2).

Therefore, taking the combined teaching of Nakamura and Hirzel as a whole would have been rendered obvious to one skilled in the art to modify Nakamura to utilize DC-balancing signal for the benefit of monitoring signal level (col. 3 line 11-22).

Re claim 31, the modified invention as claimed in claim 30, wherein the Manchester Code is used to encode the data signal (col. 4 line 38-46, "Nakamura").

Re claim 37, the modified invention as claimed in claim 30, wherein the spreading code is a Pseudo random Noise (PN) sequence (col. 1 line 48-50, "Nakamura").

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**4. Claim 6 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara US, 5,640,413 in view of May et al., US, 5,327,127.**

Re claim 6, Ichihara discloses a method for encoding a data signal (fig.3), comprising the steps of:

spreading the data signal with a spreading code to generate a transmission signal, wherein the transmission signal corresponds to the data signal (col. 4 line 6-14) and

encoding the transmission signal into an output transmission signal (col. 4 line 4-6).

However, May teaches wherein the output transmission signal contains bits (fig. 2; col. 6 line 20-32, each data consists of codes, where each code is represented by bits), the value of each bit is either a first value (1) or a second value (0), and the number of bits with the first value (three ones) is equal to the number of bits (three zeros) with the second value in the encoded data signal (col. 1 line 55-63);

wherein the output transmission signal is a DC-balanced signal (col. 4 line 34-40).

Therefore, taking the combined teaching of Ichihara and May as a whole would have been rendered obvious to one skilled in the art to modify Ichihara to have the output transmission signal contains bits and is a DC-balanced signal for the benefit of synchronizing (col. 3 line 26-30).

Re claim 25, Ichihara discloses an apparatus for encoding a data signal (fig.3),

comprising:

a spreading code generator (304) for outputting a spreading code (col. 3 line 36-40);  
a spreader (11) coupled to the spreading code generator (13), for spreading the data signal according to the spreading code, and outputting a transmission signal (col. 4 line 6-14) and

an encoder (10) coupled to the spreader, for encoding the transmission signal and outputting an output transmission signal (col. 4 line 4-6), does not teach the output transmission signal contains bits.

However, May teaches wherein the output transmission signal contains bits (fig. 2; col. 6 line 20-32, each data consists of codes, where each code is represented by bits), the value of each bit is either a first value (1) or a second value (0), and the number of bits with the first value (three ones) is equal to the number of bits (three zeros) with the second value in the encoded data signal (col. 1 line 55-63);

wherein the output transmission signal is a DC-balanced signal (col. 4 line 34-40).

Therefore, taking the combined teaching of Ichihara and May as a whole would have been rendered obvious to one skilled in the art to modify Ichihara to have the output transmission signal contains bits and is a DC-balanced signal for the benefit of synchronizing (col. 3 line 26-30).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claim 7 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara, US, 5,640,413 in view of May et al., US, 5,327,127 and in further view of Nakamura, US, 5,438,589.**

Re claim 7, the modified invention as claimed in claim 6, does not provide wherein the Manchester Code is used to encode the data signal.

However, Nakamura discloses wherein the Manchester Code is used to encode the data signal (col. 6 line 50-60).

Therefore, taking the combined teaching of Nakamura, Ichihara and May as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Ichihara and May to use Manchester Code for the benefit of eliminate interference (col. 9 line 51-57).

Re claim 26, the modified invention as claimed in claim 25, does not provide wherein the Manchester Code is used to encode the data signal.

However, Nakamura discloses wherein the Manchester Code is used to encode the data signal (col. 6 line 50-60).

Therefore, taking the combined teaching of Nakamura, Ichihara and May as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Ichihara and May to use Manchester Code for the benefit of eliminate interference (col. 9 line 51-57).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claim 3,4,13,14,20,21,32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable Nakamura US, 5,216,693 in view Hirzel et al. US, 4,606,052 and in further view of Immink et al. US, 4,573,034.**

Re claim 3, the modified invention as claimed in claim 1, does not teach wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal (col. 11 line 61-67).

Therefore, taking the combined teaching of Immink, Hirzel and Nakamura as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Hirzel and Nakamura to use the inversion of the transmission

signal for the benefit of optimizing (col. 12 line 22-25).

Re claim 4, the modified invention as claimed in claim 1, does not teach wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal (col. 12 line 14-17).

Therefore, taking the combined teaching of Immink, Hirzel and Nakamura as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Hirzel and Nakamura to use the a reversed inversion of the transmission signal for the benefit of better encoding (col. 12 line 27-30).

Re claim 13, the modified invention as claimed in claim 11, does not teach wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal (col. 11 line 61-67).

Therefore, Therefore, taking the combined teaching of Immink, Hirzel and Nakamura as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Hirzel and Nakamura to use the inversion of the transmission signal for the benefit of optimizing (col. 12 line 22-25).

Re claim 14, the modified invention as claimed in claim 11, does not teach wherein the output transmission signal comprises the transmission signal and a

reversed inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal (col. 12 line 14-17).

Therefore, Therefore, taking the combined teaching of Immink, Hirzel and Nakamura as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Hirzel and Nakamura to use the a reversed inversion of the transmission signal for the benefit of better encoding (col. 12 line 27-30).

Re claim 20, the modified invention as claimed in claim 18, does not teach wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal (col. 11 line 61-67).

Therefore, taking the combined teaching of Immink, Hirzel and Nakamura as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Hirzel and Nakamura to use the inversion of the transmission signal for the benefit of optimizing (col. 12 line 22-25).

Re claim 21, the modified invention as claimed in claim 18, does not teach wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal (col. 12

line 14-17).

Therefore, Therefore, taking the combined teaching of Immink, Hirzel and Nakamura as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Hirzel and Nakamura to use the reversed inversion of the transmission signal for the benefit of better encoding (col. 12 line 27-30).

Re claim 32, the modified invention as claimed in claim 30, does not teach wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal (col. 11 line 61-67).

Therefore, taking the combined teaching of Immink, Hirzel and Nakamura as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Hirzel and Nakamura to use the inversion of the transmission signal for the benefit of optimizing (col. 12 line 22-25).

Re claim 33, the modified invention as claimed in claim 30, does not teach wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal (col. 12 line 14-17).

Therefore, Therefore, taking the combined teaching of Immink, Hirzel and Nakamura as a whole would have been rendered obvious to one skilled in the art to

modify the combined teaching of Hirzel and Nakamura to use the a reversed inversion of the transmission signal for the benefit of better encoding (col. 12 line 27-30).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**10. Claim 8,9, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara US, 5,640,413 in view of May et al., US, 5,327,127 and in further view of Immink et al. US, 4,573,034.**

Re claim 8, the modified invention as claimed in claim 6, does not teach wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal (col. 11 line 61-67).

Therefore, taking the combined teaching of Immink, Ichihara and May as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Ichihara and May to use the inversion of the transmission signal for the benefit of optimizing (col. 12 line 22-25).

Re claim 9, the modified invention as claimed in claim 6, does not teach wherein

the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal (col. 12 line 14-17).

Therefore, taking the combined teaching of Immink, Ichihara and May as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Ichihara and May to use the a reversed inversion of the transmission signal for the benefit of better encoding (col. 12 line 27-30).

Re claim 27, the modified invention as claimed in claim 25, does not teach wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and an inversion of the transmission signal (col. 11 line 61-67).

Therefore, taking the combined teaching of Immink, Ichihara and May as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Ichihara and May to use the inversion of the transmission signal for the benefit of optimizing (col. 12 line 22-25).

Re claim 28, the modified invention as claimed in claim 25, does not teach wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal.

However, Immink discloses wherein the output transmission signal comprises the transmission signal and a reversed inversion of the transmission signal (col. 12 line 14-17).

Therefore, taking the combined teaching of Immink, Ichihara and May as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Ichihara and May to use the a reversed inversion of the transmission signal for the benefit of better encoding (col. 12 line 27-30).

***Claim Rejections - 35 USC § 103***

**11.** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**12. Claim 24 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura US, 5,216,693 in view Hirzel et al. US, 4,606,052 and in further view Miyoshi et al., US, 7,133,698.**

Re claim 24, the modified invention as claimed in claim 18, does not teach modulating the output transmission signal using a carrier wave to obtain a modulated signal.

However, Miyoshi teach a modulator for modulating the output transmission signal using a carrier wave to obtain a modulated signal; and an output device for outputting the modulated signal (fig.3; col.4 line 55-61).

Therefore, taking the combined teaching of Miyoshi, Nakamura and Hirzel as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Nakamura and Hirzel to modulate the output transmission signal using a carrier wave for the benefit of suppressing interference (col. 4 line 62-66).

Re claim 38, the modified invention as claimed in claim 30, does not teach modulating the output transmission signal using a carrier wave to obtain a modulated signal.

However, Miyoshi teach a modulator for modulating the output transmission signal using a carrier wave to obtain a modulated signal; and an output device for outputting the modulated signal (fig.3; col.4 line 55-61).

Therefore, taking the combined teaching of Miyoshi, Nakamura and Hirzel as a whole would have been rendered obvious to one skilled in the art to modify the combined teaching of Nakamura and Hirzel to modulate the output transmission signal using a carrier wave for the benefit of suppressing interference (col. 4 line 62-66).

***Allowable Subject Matter***

13. Claim 5,10,15,16,22,23,29,34-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rahel Guarino whose telephone number is 571-270-1198. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Payne David can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RG

*David C. Payne*  
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